



tion will be still more satisfactory in the future. The fatality of gastrostomy has, no doubt, been in great measure due to the fact that it has often been performed only at the eleventh hour, when the patient was almost moribund; "a species of refined cruelty reflecting no credit on surgery," to use the words of an authority venerated on both sides of the Atlantic.<sup>1</sup> Œsophagostomy has necessarily a much narrower range of usefulness; it is always more or less a "leap in the dark," and its effects may occasionally be brilliant; it is, after all, an operation more likely to find favour with the adventurous surgeon than with the careful practitioner. In cases of syphilitic origin, however, when the stricture is at the upper part of the gullet, Œsophagostomy offers a very good prospect of success, as the disease is much more frequently *limited* in its extent than either cancer or the lesions produced by corrosive fluids. As regards internal Œsophagotomy, increased experience will probably show, that, though its immediate results are not so frequently fatal, its ultimate effects, when successful, are less beneficial to the patient than those of either gastrostomy or Œsophagostomy.

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#### ARTICLE X.

RHABDOMYOMA OF THE PAROTID GLAND. By T. MITCHELL PRUDDEN, M.D., Director of the Physiological and Pathological Laboratory of the Alumni Association of the College of Physicians and Surgeons, New York; Lecturer on Normal Histology in Yale Medical College.

THE interest and importance which have always attended the study of the rare and complex tumours called Rhabdomyoma, or Myoma striocellulare, won greatly in significance when their characters and occurrence were adduced by Cohnheim in support of the very suggestive theory of the embryonal origin of tumours.

The fact that tumours, composed wholly or in part of such a highly organized type of tissue as striated muscle, should be formed in organs like the kidney, testicle, etc., where such tissue does not properly belong, was entirely inexplicable on any of the earlier hypotheses concerning the etiology of tumours. If, however, it be assumed that, at some time during the process of differentiation of tissues and formation of organs in the embryo, some cell or cluster of superfluous cells should form and then cease to develop, or become misplaced in such a way that its further development is rendered for the time impossible, and should remain quiescent but still endowed with all the potentialities of embryonal cells, until at

<sup>1</sup> Gross, System of Surgery, 6th ed., 1882, vol. ii. p. 495.



some period of later life when the conditions favourable to its development might occur, the formation of such heterologous tumours would be no longer enigmatical, and their life history would be in conformity to the general laws of tissue growth and development.

While the adoption of this hypothesis rendered comprehensible the occurrence of a large majority of the heterologous tumours, it found in the rhabdomyomata a most striking illustration, from the fact that they occurred—and occurred apparently exclusively—in connection with the genito-urinary system—that is, in a series of organs whose development involves such unusually complex changes during their evolution as might well favour the occurrence of such slight irregularities in growth and malpositions of minute clusters of cells as this hypothesis postulates.

It is the purpose of this paper to record a new case of an heterologous rhabdomyoma, which presents some unique and significant features both in structure and position.

The writer is indebted for the epitomized clinical history of the case to Dr. E. T. Weed, House Surgeon to the Roosevelt Hospital, N. Y.

C. B., a healthy lad, seven years of age, observed a swelling on the right side of the face, which was found to depend upon the existence of a small tumour situated near the angle of the jaw. It gradually increased in size, being painful, especially at night, and at last the swelling opened, discharging several pieces of bone. Healing then occurred, and the part remained in a quiescent condition for some time. Patient was admitted to hospital about twelve months after the first appearance of the tumour, with considerable swelling of the right lower half of face. During the operation at the seat of lesion, dead bone was discovered on the outer surface of the ramus of the jaw. A moderately firm ovoidal tumour, about the size of a pigeon's egg, was found occupying the position of the parotid gland, which was not seen as a separate structure. The dead bone and tumour being removed, a partial facial paralysis of the right side resulted, but the wound healed well, and the patient was discharged cured about eight weeks after the operation.

The examination of the tumour by the writer gave the following results: The tumour, measuring about 5.7 cm. by 3.8 cm. by 3.2 cm., is in general lobulated, and consists of two portions, firmly united, and merging without sharp demarcation into one another. About two-thirds of the tumour is quite firm in texture, surrounded by a thin, distinct capsule of connective tissue, and upon transverse section shows, irregularly scattered through the mass, tiny spheroidal or occasionally elongated bodies, somewhat lighter in colour than the surrounding tissue, and sharply outlined against it. These bodies resemble greatly in appearance the glomeruli of the spleen. The remaining third of the tumour is distinctly lobulated, soft, and has the general appearance of the parotid gland. The above-described spheroidal bodies are most abundant near the zone of junction of the harder and softer portions of the tumour, but they are present throughout the mass, and in general each thin section of one cm. square shows from eight to twelve of them.

Upon microscopical examination, the smaller, softer portion of the

tumour presents the structure of normal parotid gland. The remainder of the tumour consists largely of connective tissue, for the most part dense, but in some places loose in texture. Embedded in this, and quite uniformly distributed, are fascicles or lobular masses, consisting of striated muscle fibres in various stages of development, and surrounded by loose connective tissue. These lobules of muscle tissue are abundantly supplied with bloodvessels, and many of them contain numerous small spheroidal cells similar in appearance to leucocytes. These lobules of muscle tissue make up about one-fourth of the entire bulk of the tumour. The most fully developed of the muscle fibres vary greatly in diameter, ranging between 0.035 and 0.005 mm. They are entirely without a sarcolemma, elongated nuclei being irregularly and scantily distributed along their sides, and they are grouped in an exceedingly irregular manner, twisting and curling and crossing one another. Both transverse and longitudinal striations are clearly defined, but Krause's and Hensen's lines are only occasionally faintly visible. Thickly scattered among these more fully developed muscle fibres, in most of the lobules, are numerous large, finely granular, spheroidal, ovoidal, and broadly fusiform cells, ranging in the shortest diameter from 0.01 to 0.02 mm., and having small, mostly peripherally placed, nuclei. These cells are in many cases closely clustered along the walls of the bloodvessels, from the proliferation of whose peripheral cells they appear to originate. The bodies of these cells are deeply stained by eosin, assuming the same tint as the more fully developed muscle fibres. Between these ovoidal or elongated simply granular cells with peripheral nuclei and the incompletely developed but distinctly striated muscle fibres, all intermediate forms are found in close contiguity. The elongated cells appear at first to lie in rows, and then to form a nodulated longer or shorter cord, upon which, here and there, in many cases, the first faint indications of transverse striations may be seen. Fig. 1 shows some of these intermediate forms.

Fig. 1.



The small whitish bodies, above mentioned, vary in diameter from 0.2 to 1.0 mm. They are situated sometimes within the lobules of muscle fibres, and sometimes in the connective tissue between the latter. They appear to be invariably associated with small arteries, surrounding them or lying close at one side. In some sections which were suitably cut, a branching artery could be seen, upon whose larger and smaller divisions

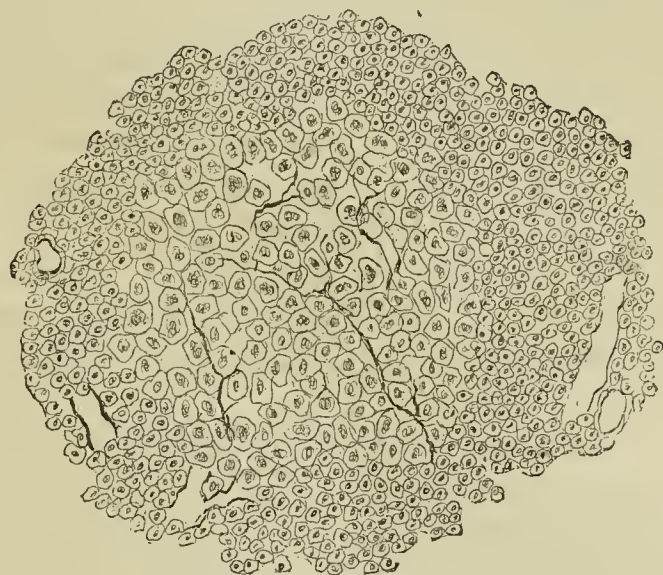


these bodies were grouped in a manner similar to the arrangement of the glomeruli in the spleen, but much closer together. The structure of these bodies differs. The smaller ones consist simply of a collection of small spheroidal or polyhedral cells, closely packed together, without demonstrable intercellular substance, and closely surrounding a small artery, the whole being sharply outlined against the surrounding tissue. Such a structure is represented in Fig. 2. Then there are somewhat larger bodies

Fig. 2.



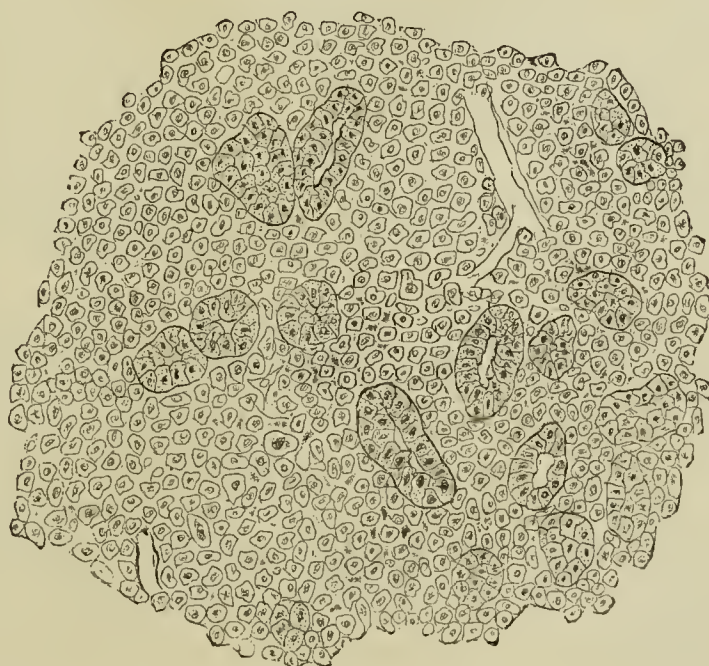
Fig. 3.



which have the same general appearance, but which have a well-marked underlying reticulum of fine anastomosing fibres. The meshes of this reticulum are filled with cells: those near the periphery being small, spheroidal, or slightly polyhedral, resembling leucocytes, and very closely packed together; while the central meshes are occupied by larger polyhedral cells with large nuclei. These structures are usually well supplied with capillary bloodvessels, Fig. 3.

Then still another variety of these bodies is seen, especially near the junction of the tumour proper with the parotid gland, having the same general appearance to the naked eye and bearing the same relation to the bloodvessels. They have a delicate underlying reticulum, whose meshes are filled with cells similar to those occupying the central portions of the last described bodies. But scattered here and there within them, sometimes few in number and again very abundant, are seen tubular structures having a thin membrana propria and lined with cylindrical or cuboidal or polyhedral cells. Those lined with cylindrical and cuboidal cells have usually a well-defined lumen, while those lined with poly-

Fig. 4.





hedral cells usually have none. The peripheral zone of small cells is usually absent in the bodies showing these rudimentary ducts (Fig. 4).

Approaching the zone which lies between the parotid and the hard part of the tumour, the spheroidal bodies are seen to contain more and more well-defined glandular structure, excretory ducts, and normal alveoli. Often on one side of the body the structure exactly resembles that of a well-formed small lobulus of the parotid gland, while the other is occupied entirely by a mass of spheroidal cells. On the other hand, in this border-zone isolated bodies are seen resembling a well-formed lobulus of the parotid, with a sharply defined spheroidal mass of indifferentiated cells occupying the place of a small group of alveoli. Thus, between the small spheroidal bodies formed simply of a circumscribed collection of small cells around a bloodvessel, and a well-formed lobule of the parotid gland, all intermediate forms may be found, some of the more typical of which are described and figured above.

The arteries in the tumour present in a most typical form, in many cases, the lesions of obliterating endarteritis. Numerous larger and smaller nerves are irregularly distributed through the tumour.

The tumour, then, intimately connected with and involving the parotid gland, presents the usual peculiarities of structure of the rhabdomyomata. In addition to this, it contains structures which the writer feels justified in considering as atypical rudimentary lobules of the parotid gland—atypical not only in structure and development, but in their distribution through and association with the incompletely developed muscular tissue.

It will be seen, also, from the above description, that while the whole tumour is lobulated, the lobules differ in a striking way in different parts: in one part are the lobules of the normal parotid; in another the lobules are composed in part of gland-structure and in part of the above-described peculiar nodular masses of cells; in still a third portion these cell-masses occupy a part of the lobules of muscle tissue; and lastly there are lobules containing only muscular and connective tissue. The distribution of the arteries is similar throughout; small trunks are given off from the main arteries, which rapidly divide into short, thick branches, each system of which is distributed to portions of the tumour forming the lobules.

Although, as far as the writer is aware, the genuine heterologous rhabdomyomata have hitherto been found only in connection with the genito-urinary organs, and have thus seemed especially significant in the light of the hypothesis of the embryonal origin of tumours, yet the situation of this tumour is none the less calculated to lend weight to this hypothesis; for in the first place, like most of those hitherto described, it is a complex tumour; and secondly, its situation near the seat of the embryonal gill-clefts would suggest the possibility of the occurrence of irregularities in development not less important than those associated with the organs derived from the Wolffian bodies. Indeed, the parotid gland, as is well known, is a favourite field for the development of complex forms of tumours.

Without purposing to give a complete bibliography, it seems appropriate to append a list of the publications which are most closely connected with the theme of the present paper.

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#### ARTICLE XI.

LEPROSY IN THE HAWAIIAN ISLANDS. Extract from the Report of  
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THE interesting group in the North Pacific Ocean composing the Hawaiian Islands are Oahu, Hawaii, Maui, Molokai, Kauai, Niihau, Lanai, Kahoolawe (uninhabited), and four barren rocks, Molokini, Lehua, Kaula, and Nihoa, or Bird Island, and all situated in latitude  $18^{\circ}$  to  $23^{\circ}$  north, and in longitude  $155^{\circ}$  to  $161^{\circ}$  west. Although they lie within the tropics, the weather is always pleasant, never cold and never oppressively hot, the thermometer seldom reaching above  $90^{\circ}$  even in the hottest days of the warm months, and by ascending the mountain sides a cooler temperature can be enjoyed. The climate, in fact, throughout the year, is the most perfect, healthy, and agreeable that can be found anywhere in the world. During the ship's stay at Honolulu, the average temperature was  $70^{\circ}$ .

These islands being only 2100 miles from San Francisco, the principal seaport on the western coast of America, in weekly communication with said port, and yearly increase of commercial relations and public travel, I consider it a duty to call the attention of the government, through this report, to the existence and spread of leprosy in the islands, with the hope and suggestion that some steps may be taken by the proper health authorities to prevent the introduction of the disease into the United States.

The Hawaiian government saw the necessity some years ago of doing something to prevent the spread of leprosy, and in 1865 founded a leper settlement on the island of Molokai, where patients affected with the disease could be thoroughly isolated, and treated in hospitals provided for the purpose. This system has done much, no doubt, in preventing an increase of the disease, and some indications of progress in that direction would doubtless be observable before this, if existing laws relating to their absolute segregation had been thoroughly carried out. This, unfortunately,



however, has not been done, and a large proportion of lepers are allowed to remain undisturbed, with their families and friends, throughout the islands, to unconsciously disseminate the disease.

As there is a great and perfectly natural antipathy on the part of the natives to removal to Molokai, a branch hospital has been recently started at Honolulu, inviting those affected with the disease to apply voluntarily for treatment and care. This establishment contains now about 100 patients, and with the 800 confined to the leper settlement at Molokai, makes only 900 under government control; while, according to the last report of the board of health, the number of lepers in the kingdom is estimated at 2000, or 5 per cent. of the whole native race, and also stated that as many more have the seeds of the disease. It is therefore safe to state, that there is not only a larger proportion of recognized lepers in the Hawaiian Islands than in any other country in the world, but that the proportion, from statistics and observation, is steadily increasing.

I was pleased to learn, before leaving, that the board of health had determined to make a rigorous search in the districts of Honolulu to ascertain the exact number of persons suffering from the disease, their race, sex, age, condition, and other particulars, to settle the question as to the number at large in that particular section, and to subject them to proper treatment.

Leprosy, according to the popular belief of most natives, is supposed to have been introduced into the islands about forty years ago from China. The disease from that time has gradually spread from year to year, and has markedly increased since the indiscriminate and careless vaccination practised during the severe epidemic of smallpox in 1853, until it has finally assumed the proportions heretofore stated. It may be well to mention that, during the epidemic of smallpox referred to, there were 3546 recorded cases and 1276 deaths.

I can hardly credit the universal spread of the disease, but for the general belief that it is considered only slightly, or not at all contagious, and treated as such, from the beginning—allowing free individual intercourse—with weak enforcement of laws for its suppression.

The question of contagion forms, no doubt, a great factor in the study of the disease, and should be definitely settled before permitting the freedom now allowed. The whole history of leprosy in the islands points directly to its being contagious in nature, a disease certainly communicable to healthy persons, and propagated by the general mode of living to such natives coming in contact with it who are rendered susceptible to the poison through want of cleanliness, insufficient or poor diet of raw fish, seaweed, poi, etc., combined with a condition of system impoverished, perhaps, by syphilis, from which the native population have no doubt largely suffered.

It is an historical medical fact, that leprosy has spread in isolated villages,